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| Name: | Date: |
| Course/Subject: Keystone Algebra I | Team: |
| Topic: Operations on Real Numbers | School District: Blue Mountain |

Key Learning: Real Numbers can be combined or broken apart and analyzed using various properties and rules.

Unit Essential Question: What are the various operations applied to real numbers?

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| Concept: Basic operations (+, -, x, ÷) | Concept: Comparing and ordering Real Numbers | Concept: Simplifying square roots |
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| Lesson Essential Questions:   * How are expressions simplified using order of operations? * Explain why order of operations are necessary to find a unified solution. (ET) | Lesson Essential Questions:   * How are real numbers compared? * How can temperatures be compared using inequalities and number lines? (ET) | Lesson Essential Questions:   * How are square roots simplified using the product rule? * How are square roots simplified using the quotient rule? * How can square roots be simplified without converting to decimal equivalents? (ET) |
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| Vocabulary:   * Sum * Product * Difference * Quotient * Arithmetic expression * PEMDAS | Vocabulary:   * Number line * Inequality symbols ( <, >, ≤, ≥) | Vocabulary:   * Radicand * Index root * Radical symbol * Simplified radical form * Perfect square roots |
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| Additional Information/Resources: Calculators  PA Standards: 2.1, 2.2, 2.8 | | |

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| Concept: Performing LCM and GCF operations | Concept: Law of Exponents | Concept: Absolute Value | Concept: Evaluating Algebraic Expressions | Concept: Properties of Real Numbers |
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| Lesson Essential Questions:   * How is the LCM of 2 or more arithmetic expressions found? * How is the GCF of 2 or more arithmetic expressions found? * What are the differences between LCM and GCF? (ET) | Lesson Essential Questions:   * What rules are applied to evaluate expressions involving exponents that are zero, positive and negative numbers? * Explain why 24 is not equal to 8? (ET) | Lesson Essential Questions:   * What is the algebraic definition of absolute value? * What is the geometric definition of absolute value? * What is the difference between Algebraic and Geometric absolute values? (ET) | Lesson Essential Questions:   * How do you evaluate an algebraic expression? * Explain the steps used to evaluate an Algebraic expression (ET) | Lesson Essential Questions:   * How are real numbers combined and analyzed using properties? * Compare and contrast the properties of Algebra. (ET) |
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| Vocabulary:   * LCM * GCF * Prime factors * Composite factors * Factor tree | Vocabulary:   * Base * Exponent * Power term | Vocabulary:   * Absolute value * Number line | Vocabulary:   * Variable * Algebraic expression | Vocabulary:   * Commutative * Associative * Identity * Inverse * Distributive * Reciprocals |